Small Business Innovation Research/Small Business Tech Transfer

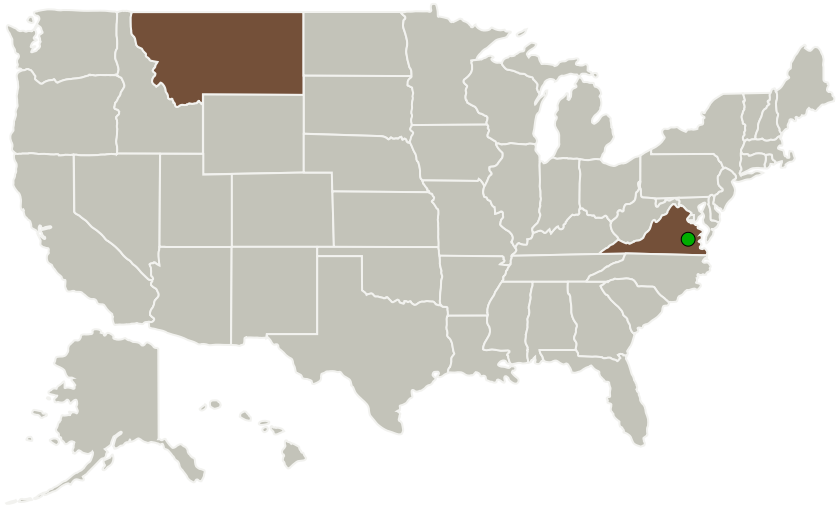
Fast Electro-Optic Switch for Pulsed Space-Based Lidar Beam Steering, Phase I

Completed Technology Project (2017 - 2017)

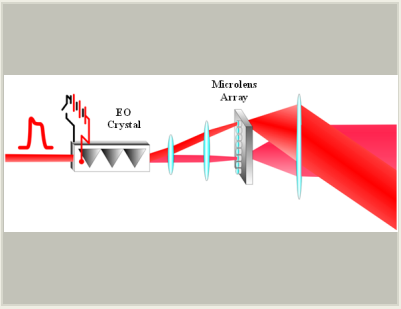
Project Introduction

Lidar is a core technology in NASA's arsenal for science measurements from ground, air-borne and space based platforms. AdvR is proposing a beam steering mechanism for space-based Lidar based on AdvR's electro-optic deflector technology with no moving parts, making it favorable for space-based operation. The system operates on the principle of electro-optically controlled prisms engineered into a ferroelectric substrate, and is designed to have low loss, fast switching speed and settling time, good isolation and operation from the ultraviolet to the mid-infrared. AdvR has previously built and tested electro-optic switches and scanners and the demonstrated performance shows promising potential for use in discrete angle beam steering for Lidar. This Phase I SBIR will investigate the use of the EO deflector technology for a fast beam steering mechanism to improve the sampling density, coverage and signal to noise ratio of NASA's Space-based Lidar systems.

Primary U.S. Work Locations and Key Partners



Organizations Performing Work	Role	Type	Location
ADVR, Inc.	Lead Organization	Industry	Bozeman, Montana
Langley Research Center(LaRC)	Supporting Organization	NASA Center	Hampton, Virginia



Fast Electro-optic Switch for Pulsed Space-based Lidar Beam Steering, Phase I Briefing Chart Image

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Primary U.S. Work Locations	
Montana	Virginia

Project Transitions

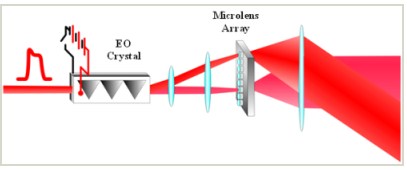
June 2017: Project Start

December 2017: Closed out

Closeout Documentation:

- Final Summary Chart*(https://techport.nasa.gov/file/140762)*

Images



Briefing Chart Image
Fast Electro-optic Switch for Pulsed Space-based Lidar Beam Steering, Phase I Briefing Chart Image *(https://techport.nasa.gov/image/133492)*

Organizational Responsibility

Responsible Mission Directorate:
Space Technology Mission Directorate (STMD)

Lead Organization:
ADVR, Inc.

Responsible Program:
Small Business Innovation Research/Small Business Tech Transfer

Project Management

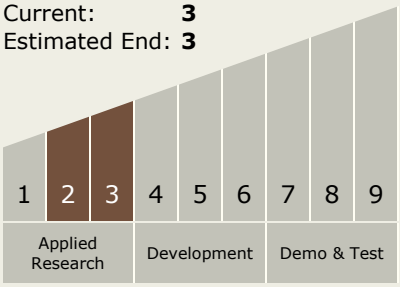
Program Director:
Jason L Kessler

Program Manager:
Carlos Torrez

Principal Investigator:
Pushkar Pandit

Technology Maturity (TRL)

Start: **2**
Current: **3**
Estimated End: **3**



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Technology Areas

Primary:

- TX08 Sensors and Instruments
  - TX08.1 Remote Sensing Instruments/Sensors
    - TX08.1.5 Lasers

Target Destinations

The Sun, Earth, The Moon, Mars, Others Inside the Solar System, Outside the Solar System